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ABSTRACT

This paper offers a theory-based course development methodology for the creation of an information systems (IS) course to address the needs of top executives. A survey of institutions offering the Executive MBA (Masters of Business Administration) degree was conducted that focused on: (1) the extent to which the IS course is included in MBA programs; (2) why the IS course has been excluded from some MBA programs; (3) content/topic areas included in IS courses; and (4) processes/learning strategies employed in IS courses. Findings revealed that many executive management programs fail to provide course coverage of important IS management topics. The content and delivery of the IS component of the Executive MBA program can be substantially enhanced through the use of a course development methodology grounded in relevant IS research and theories of adult, individual, and organizational learning. A model course created with a theory-based development methodology was implemented and evaluated by Executive MBA students. Results show that the IS course in Executive MBA programs can be both relevant and valuable for executives when careful attention is paid to the development of course content and process. Key issues in IS management/education are listed, and the model IS course outline is included. (MES)

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MANAGING INFORMATION TECHNOLOGY FOR PERFORMANCE: INFORMATION SYSTEMS EDUCATION FOR EXECUTIVES

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The support of top managers is advocated by both researchers and information professionals as a crucial element for the successful deployment of information technology in organizations. Executive education programs are an important source of information systems knowledge for top managers, and hold the potential to influence the level of executive involvement in information systems management. This article offers a theory-based course development methodology for the creation of an IS course to address the needs of top executives. A survey of institutions offering the Executive MBA degree reveals that an alarming proportion of executive management programs fail to provide course coverage of important information systems management topics. The content and delivery of the information systems component of the Executive MBA program can be substantially enhanced through the use of a course development methodology grounded in relevant information systems research and theories of adult, individual, and organizational learning. A model course created with a theory-based development methodology was implemented and evaluated by Executive MBA students. The results show that the information systems course in Executive MBA programs can be both relevant and valuable for executives when careful attention is paid to the development of course content and process.

INTRODUCTION

Top management support has been emphasized by both researchers and information systems (IS) professionals as a key element for achieving greater benefits from information technology (IT) and positive returns on IS investments (Jarvenpaa and Ives, 1991). The level of senior executive involvement and participation in the management of IT is likely to be influenced by the attitudes and belief system the executive has with respect to the IS function within the organization. In turn, the executive's belief system is determined in part by personal dimensions, such as age, functional experience, and educational background (Song, 1982). The IS education provided to executives has the potential to influence their involvement in the IT management process, and thus impact the contribution of IS to organizational performance.

Executive MBA programs provide one potential source of IS education and training for top management. The objectives of this paper are to examine the IS component of current Executive MBA curricula and describe the development of a model course which meets the IS educational needs of executives. In the following section, the dimensions of the IS course in executive education are examined. Next, the results of a study of the IS component in current Executive MBA programs are presented and discussed. A description of the development and implementation of a model IS course is then provided. The paper concludes with recommendations for on going IS course development and

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commentary on the future of the IS component in Executive MBA education.

DIMENSIONS OF INFORMATION SYSTEMS EDUCATION

The IS component of Executive MBA programs can be described along two key dimensions: content and process. Content refers to the subject matter and topic areas covered in the IS course. Process refers to the means by which IS knowledge is transmitted to, or acquired by, learners participating in the IS course. These two dimensions are discussed below in further detail.

Course Content

IS course content typically addresses both *information technology* and *information systems* topics. In this context, *information technology* refers to the hardware and software elements of data processing, office automation, telecommunications, and other electronic technologies (Derived from Martin, DeHayes, Hoffer and Perkins, 1991). *Information systems* refer to the collection of computer programs, hardware, people, procedures, documentation, forms, inputs, and outputs used to support an organization. An information system consists of these elements and their interrelationships (Derived from Shore, 1988). Based on these definitions for IT and IS, IT is a subset of IS. As such, IT focuses on the technological components of IS. Examples of topics within the IT content area include fundamental concepts of computer hardware and software, personal computing skills, and advanced information technologies. Advanced information technology refers to emerging technologies and technological trends which industry and academic leaders have identified as key innovative elements for business. Specific advanced information technologies may include collaborative systems, multimedia, or internet applications.

On a broader level, IS topics examine the interplay between IT and organizational environments. Examples of topics within the IS content area include the management of the information resource, making effective use of the data resource, and the strategic alignment of the IS function with the organization.

Several studies have examined the content of executive management programs from the perspective of current students, alumni, deans, faculty, and corporate representatives (Weber, 1994; Kassner and Fertig, 1992; Porter and McKibbin, 1988;). Porter and McKibbin (1988) examined management education and development trends in a study initiated by the American Assembly of Collegiate Schools of Business (AACSB). In the study Deans and faculty expressed the need to give computer skills more coverage in the management education curriculum. However, corporate respondents rated computer skills fairly low, compared with such skills as analytical thinking, leadership, and oral communication skills.

A study of alumni of a large midwestern university identified information technology as a growing area of interest. Kassner and Fertig (1992) asked the alumni of an executive MBA program to describe their experience in terms of *what the content was* and *what the content should have been*. Advanced information technology was ranked fourth in terms of topics which "should have been covered," after the more traditional topics such as general management skills, development and formulation of business strategies, and financial management. Thus, alumni appeared to think that advanced information technology, along with more traditional topics, should be allocated the greater amount of time in the curriculum.

The trend toward more coverage of advanced information technologies is driven by the emergence and proliferation of a variety of computer-based decision support systems, including expert systems and executive information systems. In addition, new information systems and technologies, such as groupware and electronic data interchange, possess innovative and strategic capabilities. In the future, effective executives must be able to interpret technological trends and assess the potential impacts of new IT on the organization. The findings of the Kassner and Fertig study (1992) are compatible with the outcome of a series of focus group sessions conducted during the revision of an Executive MBA program at another midwestern university. Both current students and alumni indicated a need for more coverage of advanced information technology (Weber, 1994).

IS researchers provide an additional perspective on the appropriate content of IS education for executives (Kunde, 1989; Lane, 1985; O'Toole and O'Toole, 1966). They suggest that while it is not necessary for top managers to be experts on the "how-to" of information technology, they should be familiar with what information technology can do for the organization, knowledgeable about the organization's IS activities, and well-informed about IS competitive capabilities and initiatives.

The content dimension of an IS course for executives is of particular importance in light of recent allegations that university-sponsored management education programs are

failing to keep pace with modern business realities (Sheridan, 1993). The result has been a gap between the competencies provided by university education and the knowledge required managing organizations in an increasingly complex business environment. Unfortunately, the suggestions found in the previously discussed studies provide too narrow and limited a perspective on the IS educational needs of top executives to produce viable course content guidelines.

An alternative approach to developing IS course content for the Executive MBA curriculum is based on an examination of current and emerging issues in the management of IS, and the relationship between IT, IS, and organizations. Several studies in these areas provide guidance and justification for IS course content. A study recently reported by the University of Minnesota Management Information Research Center identified the key management issues on which executives will focus time and resource investment during the mid-1990s (Janz, Brancheau, and Wetherbe, 1995). The top 20 issues identified by the study are shown in Column A of Table 1.

While the key issues were derived from rankings provided by chief information officers and other senior IS executives, the topics they represent are highly relevant to the IS educational needs of Executive MBA program participants for several reasons. First, senior IS executives are typically at a level that places them on a peer basis with other executive managers. Frequently, the senior IS executive fills a dual role as chief financial officer or chief operations officer within the organization. Therefore the IS management issues defined by a group of senior IS executives are likely to be highly congruent with

TABLE 1
KEY ISSUES IN IS MANAGEMENT AND EDUCATION

Top 20 IS Management Issues (Janz, Brancheau, Wetherbe, 1995)	**Top 20 IS Topics Covered in Current EMBA Programs (No. of Courses)**
1. Developing an Information Architecture.	1. Computer Hardware/Software Fundamentals (94)
2. Making Effective Use of the Data Resource	2. Personal Computing Skills (73)
3. Improving IS Strategic Planning	3. Overview of Computing/IS in Organizations (62)
4. Specifying, Recruiting, and Developing IS Human Resources	4. Increasing Understanding of Role and Contribution of IS (56)
5. Facilitating Organizational Learning and Use of IS Technologies	5. Facilitating and Managing Decision and Executive Support Systems (55)
6. Building a Responsive IT Infrastructure	6. Systems Development Life Cycle (52)
7. Aligning the IS Organization with that of the Enterprise	7. Management Information Systems(35)
8. Using Information Systems for Competitive Advantage	8. Making Effective Use of the Data Resource(24)
9. Improving the Quality of Software Development	9. Improving IS Strategic Planning (24)
10. Planning and Implementing a Telecommunications System	10. Planning and Implementing a Telecommunications System (16)
11. Increasing Understanding of Role and Contribution of IS	11. Planning and Using CASE Technology (14)
12. Enabling Multi-Vendor Data Interchange and Integration	12. Aligning the IS Organization with that of the Enterprise (13)
13. Developing and Managing Distributed Systems	13. Developing and Managing Distributed Systems (13)
14. Planning and Using CASE Technology	14. Facilitating Organizational Learning and Use of IS Technologies (12)
15. Planning and Managing the Applications Portfolio	15. Improving the Quality of Software Development (11)
16. Measuring IS Effectiveness and Productivity	16. Advanced Information Technology Uses and Capabilities (10)
17. Facilitating and Managing Decision and Executive Support Systems	17. Using Information Systems for Competitive Advantage (9)
18. Facilitating and Managing End-User Computing	18. Developing an Information Architecture (6)
19. Improving Information and Security Control	19. Building a Responsive IT Infrastructure (6)
20. Establishing Effective Disaster Recovery Capabilities	20. Enabling Multi-Vendor Data Interchange and Integration(6)

the views of other executive managers. In addition, IS issues and IT investment opportunities brought before executive management teams by senior IS executives will undoubtedly relate to the key issues identified by the study. Second, a study of Fortune 500 senior executives revealed that chief executive officers, chief financial officers, and chief operations officers in 95% of the companies surveyed agree that information technology plays a central role in the success of their company (Nolan, Norton & Company, 1994). Due to the importance given information technology, 75% of these executives either direct or review the IT investments of their organizations. Thus it is not surprising that respondents also indicated considerable interest in executive education and IT management training to help them better understand how to fully leverage information technology's potential. Since the senior IS executive is the key source of IT knowledge for most senior executives (Newsbytes, 1994), it is reasonable to assume congruence between key IS issues of senior IS executives and those of other executive managers.

Given the strong likelihood of congruence between senior IS executives and other executive managers on key IS management issues, the top ten IS management issues identified in the recent study by Janz et. al. provide both a sound basis of comparison for the content of current IS course offerings, and a starting point for the development of a model course. Following a discussion of course process, the results of a study comparing the content of current Executive MBA IS course offerings with key IS issues will be presented. The use of the key issues in developing the content for a model IS course will also be described.

Course Process

Course process, or modes of educational delivery, may be viewed on a continuum from passive involvement to active participation by students in the learning process. Passive learning strategies are anchored by the traditional lecture mode at one end, while the active approaches are characterized by self-directed learning experiences at the other extreme. A variety of instructional modes are possible, including modified lectures, case study, group problem solving, and student presentations.

Several researchers have examined the process component of executive education. In an assessment of the changes needed in order to produce executive education programs that meet the requirements of the management challenges of the 1990s, Verlander (1992) conducted a review of theory and research on adult learning. He contends that executives, as adult learners, are more receptive to innovative processes and active learning strategies than other groups. However, in many executive education programs, passive learning techniques exemplified by the traditional lecture still dominate.

More progressive executive education programs have adopted the case method as a learning process. Closely identified with the Harvard Business School, the case method is an active, discussion-oriented learning approach that has gained wide acceptance in graduate business education (Barnes, Christensen, & Hansen, 1994). The case approach replaces the traditional lecture by linking content and application in a simulated problem-solving scenario. The case is a factual description of a situation confronting a person, group, or organization (Bonwell and Eison, 1991). The case study can range from a highly structured exercise to a very unstructured problem that may raise a variety of complex issues and alternative solutions.

Case studies have been empirically proven to hold both advantages and disadvantages as an active learning strategy (Bonwell and Eison, 1991). Since cases are typically based on real life incidents, they allow students to vicariously experience situations they may encounter in the future. This helps bridge the gap between theory and practice. In addition, the decision-making model for case studies fosters higher-order thinking and promotes affective involvement, which can lead to changes in attitudes. The disadvantages of case studies involve the shortcomings of both the instructor and the students. The instructor must be willing to give up some classroom control and actively promote student learning. Students, frequently uncomfortable with the ambiguity and loss of rigid structure in the classroom, must possess or cultivate the ability to clearly present their point of view and listen to others.

While the use of case studies in executive education has been highly effective, it is important to note that the case approach represents only one of many course processes available to facilitate active learning in adult educational environments. Rather than rely on more traditional educational delivery modes, Verlander recommends active learning processes that are more participative in methodology, and more focused on the unique requirements of the learner. Verlander's (1992) process recommendations will be compared to the processes represented in current IS courses, and his theory-based guidelines for modifying the process dimension of executive education programs will be incorporated in the design of a model IS course.

INFORMATION SYSTEMS IN EXECUTIVE EDUCATION

One purpose of this study is to determine the current role of the IS component in executive education, specifically Executive MBA programs. The following research questions focus on understanding the current status of the Executive MBA IS course:

- To what extent is the IS course included in Executive MBA programs?
- Why has the IS course been excluded from some Executive MBA programs?
- What content and topic areas are included in IS courses currently offered in Executive MBA programs?
- What processes and learning strategies are employed in the IS courses currently offered in Executive MBA programs?

Sample and Data Collection

The 117 institutions listed in the 1993 Directory of Executive MBA Programs as offering executive education programs constituted the sample for the study. The study consisted of a mail survey and content analysis of documents gathered from survey respondents. A survey instrument was developed to capture descriptive information about IS course offerings. The instrument was pilot-tested for readability and coherence by two Executive MBA program directors and three program coordinators.

In an attempt to enhance response rates from the institutions, surveys and cover letters were mailed to both the program director and the program coordinator at each institution. Multiple responses from a single institution were compared for consistency and combined to produce one response per institution. Discrepancies between program director and program coordinator responses were rare, and were resolved through follow-up phone contact. A total of 34 institutions responded by returning survey forms, resulting in an institutional survey response rate of 29 percent.

In addition to completing the survey, participants were asked to include detailed course descriptions and course syllabi for IS course offerings identified in their response. Of the 34 institutions responding, 14 returned the requested course descriptions and syllabi. In an effort to expand the sample coverage, the use of archived Executive MBA program brochures as a source for course content data was explored.

The archived Executive MBA program information covered the period from 1991 to 1995. Each archived brochure described a full Executive MBA program, typically covering a two-year period. For example, program brochures for two-year programs beginning in 1991 provided curriculum plans ending with a spring 1993 graduation date. Program brochures that extended into 1995 contained two-year program beginning in fall 1993 and concluding with a spring 1995 graduation date. The archived data provided IS course descriptions for the most recent Executive MBA program participants, those expected to complete the program between 1993 and 1995. The most current brochures were not available for each Executive MBA program. Approximately 75 % of the brochures described programs for spring 1995 graduates, 20% related to spring 1994 graduates, and the remaining 5% covered Spring 1993 graduates. Since the majority of brochures described the most current IS course offerings, they were determined to be a viable alternative source of IS course content data.

To justify the use of the brochure course descriptions as a course content data source, the 14 descriptions/syllabi provided by respondents were compared to course descriptions collected from the archive of Executive MBA program brochures. Brochure course descriptions and respondent-supplied course descriptions for each of the 14 institutions were broken down into key phrases. The key phrases derived from each source were compared to determine the level of consistency between respondent-supplied and brochure course descriptions. For the 14 pairs of descriptions, an average of approximately 81% of key phrases from respondent-supplied descriptions was matched by the corresponding brochure descriptions. This level of consistency supported the use of the archival source data as a proxy for respondent-supplied course descriptions.

Course descriptions for the remaining 20 institutions represented among the original 34 respondents were collected from the archived Executive MBA program brochures. The archive also provided course content data for an additional 52 non-respondent institutions. The course content data collected from archival sources for 52 non-respondent institutions was combined with that of the original 34 respondent institutions to generate an effective sample coverage of n=86, or 73.5% of the initial 117 institutions surveyed.

Data Analysis and Discussion

The presentation of data analysis techniques and subsequent discussion of results are organized around the four areas represented by the research questions.

IS Course Inclusions and Configurations. The extent to which the IS course is included in Executive MBA programs is represented by the proportion of institutions offering IS courses in their programs, and by the distribution of IS courses by category (preparatory/non-degree credit course, required course, or elective course). Data from survey responses and archival sources show that IS courses are offered by approximately 77 percent of institutions supporting Executive MBA programs. IS course work functions as preparatory non-credit work in 18 percent of these programs, constitutes a program requirement in 91 percent of the programs, and is included as electives in approximately 10 percent of programs.

Of those programs offering IS courses (n=66), the majority of institutions (92 percent) offer at least one required IS course, while 10 percent offer at least 2 required IS courses. One of the institutions examined offers a unique Executive MBA in IT Management degree which requires completion of five IS courses. Overall, 66 institutions offer a total of 92 IS courses within Executive MBA programs. While exact enrollment figures were not available, most Executive MBA classes contain between 15 and 35 students.

Exclusion of the IS Course. Approximately 23 percent of the institutions for which data was available do not offer IS course work within their Executive MBA program. Respondents indicating no IS course offerings were asked to briefly describe the history and/or anticipated future of the topic within their program. Representatives from four of these institutions reported that an IS course was offered in the program in the past, but was recently eliminated. Reasons for dropping the IS course included: student evaluations indicating minimal need for the topic, retirement of faculty member responsible for the course, integration of IS topics into other courses, and consistent poor evaluations of the IS course. Course content of courses dropped included: basic microcomputing skills, overview of IS/IT, and software applications

Five of the institutions indicated that the addition of an IS course to the program is currently under consideration. The following obstacles to adding an IS course were identified: finding time in the program, lack of faculty interest in creating the course, finding appropriate faculty to teach the course, and lack of funds for information technology equipment and support. If a new IS course is added to these programs, the topics most likely to be covered include: IT strategic uses, process reengineering, management of IT and impacts on organizational design, management use of information/data for decision making, and the use of networks and databases to conduct business research. One institution also noted a plan to integrate IS topics into a new operations course.

Current IS Course Content. Of the original 34 institutions responding to the survey, 12 indicated no IS course offerings in their respective Executive MBA programs. The remaining 22 institutions were asked to indicate the topic areas covered by courses in each of three categories: preparatory, required, and elective.

The content of preparatory, non-credit IS courses appears to be limited to introductory computing skills, including microcomputer software for word processing, spreadsheets, and data management. Notebook computers, presentation software, and instruction in the use of email and the Internet were also topics reported in preparatory courses.

The required IS course focuses on an overview of computing and the use of information systems in organizations, with an emphasis on management information systems. It appears an emphasis on decision support systems and executive information systems also exists in many of the required courses. Over 10 percent of required courses also include hands-on instruction in application software, the notable difference from preparatory courses being the addition of statistical software packages. Other topics appearing unique to the required courses include the economics of information, global MIS issues, and the organizational impacts of IS. The electives reported by institutions which did not have a required IS course contained topics that are very similar to the required topics found at other institutions. Electives offered by institutions which also had a required IS course covered the strategic use and implications of information technology, organizational information systems, and telecommunications technology.

Comparison of Course Content to Key IS Management Issues. The initial discussion of IS course content suggested that key IS management issues identified by researchers form the basis for analysis of the content of current IS course offerings. The key issues shown in Column A of Table 1 relate to the expected management foci during the mid-1990s. Executive MBA students who complete the program between 1993-95 will be part of the

executive management team responsible for dealing with the key issues identified by the study. Thus, it is appropriate that the IS course content of graduates from 1993-95 and anticipated IS management issues for the mid-1990s form the basis for analysis.

To determine whether the content of current IS courses is consistent with the key IS management issues executive managers must be equipped to confront, content analysis was performed on the course descriptions. First, primary noun phrases were extracted from each course description. The "uneven" levels of data created by use of brief course descriptions in some instances and more detailed syllabi in others posed a problem in this portion of the analysis. For example, a detailed course syllabus for a required course at one institution indicated coverage of WordPerfect, LOTUS, and dBASE IV, while a more general course description from a program brochure indicated coverage of word-processing software, spreadsheet software, and data management software. To correct for varying levels of data detail, more specific phrases were generalized to the next highest level. This means that when detailed items such as LOTUS 1-2-3 or MS-EXCEL were extracted, their frequency counts were combined with the counts for the phrase "spreadsheet software." This allowed directly related phrases to be combined and resulted in meaningful data reduction. A total of 96 distinct words and phrases representing the 92 IS courses offered at 66 institutions were identified following extraction and data reduction.

Second, the 96 distinct phrases were compared to descriptions of the key issues listed in Column A of Table 1. Detailed descriptions of the key issues are found in the research literature (Janz, Brancheau, and Wetherbe, 1995; Neiderman, Brancheau, and Wetherbe, 1991). In the first coding pass, direct matches between the extracted phrases and the issue descriptions were identified and the corresponding frequency counts were aggregated. In the second coding pass, single key words from the remaining extracted phrases were compared to the issue descriptions. When a match was found, the frequency counts were combined accordingly. In both the first and second coding pass, multiple assignments were possible. In the third coding pass, the extracted phrases that could not be matched to issue descriptions were compared to each other and aggregated to form more general categories. A graduate student, functioning as a second coder, was consulted in this pass. In addition to the 20 key management issues, the following topic categories were identified: computer hardware and software fundamentals, personal computing skills, overview of computing/IS in organizations, advanced information technology uses and capabilities, systems development life cycle, and management information systems. The results of the coding effort are provided in Column B of Table 1, which shows the top 20 IS topics covered in current Executive MBA programs.

The comparison of Columns A and B in Table 1 reveals the differences between recommended IS course content and actual IS course content within existing Executive MBA programs. The primary overlap occurs in the areas of: making effective use of the data resource, improving IS strategic planning, and planning and managing a communications system. The majority of the IS actual course content appears to focus on basic information systems concepts, acquisition of personal computing skills, and general IS management issues.

The content analysis technique used to map the content of current Executive MBA IS course offerings with the key IS management issues has several problems. First, the focus on IS course descriptions within Executive MBA programs ignores the IT/IS topics which may be covered in non-IS courses. Second, the test mapping between the 14 respondent-supplied course syllabi and brochure course descriptions was approximately 81% accurate. This indicates that some important IS topics may not have been included in the brochure course descriptions although they were covered in the course. Third, a significant degree of overlap between issues and topic areas appears to exist. The overlap problem is further compounded by the broadly defined basic categories such as computer hardware/software fundamentals. The limitations of the content analysis technique provide ample reason to approach the interpretation of the content comparison with caution.

Current IS Course Process. Survey respondents who indicated IS course offerings (n=22) were asked to indicate the teaching approaches and methods used in these courses. The lecture represents the dominant mode of instruction for IS courses, with 90 percent of institutions relying on this traditional mode. The second most popular mode of instruction was the case study, indicated by approximately 86 percent of respondents. Case studies are followed by small group projects as an instructional process, with about 81 percent of respondents indicating their use. Hands-on laboratory exercises (67 percent) and group discussion (62 percent) were also popular instructional processes.

A careful review of the course syllabi returned by respondents indicated that most IS courses use a combination of learning strategies. Lecture, case study,

small group projects, and hands-on lab exercises are frequently employed in a single class. None of the courses represented by the syllabi appeared to be entirely case study oriented, although an average of 5 cases was covered in most courses. While the predominance of the passive lecture method is consistent with Verlander's (1992) findings, it appears that more active learning strategies are also popular in the current IS course offerings.

DISCUSSION

Given the increasing complexity of the business environment and the rapid development of potentially high impact information technologies, the proportion of Executive MBA programs without an IS component seems disturbingly high at 23 percent. This is particularly troubling since the typical Executive MBA student has an average of 8-10 years of industry experience, making it highly unlikely that the executive was exposed to relevant formal IS education during undergraduate studies in the late 1970s or early 1980s. Considering the explosion of advanced information technologies, the proliferation of IT-enabled change initiatives, and the emphasis on business process reengineering through technology, it seems doubtful that an Executive MBA program could meet the needs of top managers without an IS course.
Equally disturbing is the fact that a number of programs have decided to eliminate the IS course in the past several years, the reasons cited pertaining to "minimal need," "the assumption that the material would be integrated into other courses," and "consistently poor evaluations from students and alumni." An examination of the content of eliminated courses provides a hint of understanding as to why 23 percent of institutions may find little value in retaining the IS course in the executive curriculum. The content of these courses was typically limited to introductory topics such as computing hardware and software, personal computing skills, and an overview of the role of IS in the organization. These topics represent areas where knowledge is frequently acquired with substantial industry experience. Limiting content to these areas prevents the delivery of meaningful, relevant IS topics to executives. If IS courses were designed to introduce topics more directly linked to the needs and concerns of executives, it is likely that a high level of support would exist for the IS component in Executive MBA programs. Recent surveys certainly highlight both the need and desire for an IS/IT component in executive education (Norton, Nolan & Company, 1994)

The fact that 19 percent of programs without an IS offering are considering adding an IS course to the curriculum within the next several years is promising. The proposed topic areas are particularly noteworthy, as they focus on content more closely related to key IS management issues, such as IT strategy and the strategic uses of IT, management of IT and the IT impact on organizational design, and the use of IT to conduct business research.

Although the sample from which these courses are drawn is quite limited, a comparison of the course topics "on the way out" with the course topics "on the way in" is particularly interesting and may predict a period of transition for IS course content in Executive MBA programs. Current IS course offerings in Executive MBA programs focus heavily on low level, definitional and descriptive aspects of IS, such as fundamental concepts of computer hardware and software, acquisition of personal computing skills, overviews of computing systems/IS in the organization, and the role and contribution of IS. While these topics may provide much needed background for some executives, IS courses in this genre fall short of providing the knowledge base needed to equip executives to deal with their increasingly complex environments. More sophisticated topics such as developing an information architecture, aligning the IS organization and strategy with that of the firm, and fostering IT-enabled business process reengineering efforts are more closely aligned with the IS educational needs of executives. In addition, exposure to advanced information technologies which are key to future organizational transformation efforts will help supplement executive management knowledge currently being gathered from IS managers.

The argument for a transition in IS course content seems weakened by the experience of one Executive MBA program respondent who reported the failure of three IS courses with different content foci. However, in this instance course process may have played a significant role in the demise of the course rather than course content. The results show that the traditional passive learning model continues to dominate course delivery in executive education programs. Opportunities clearly exist to incorporate innovative learning strategies to enhance the educational experience of executives.

Prior research and the survey results described in this study indicate the need to pay careful attention to both content and process when developing and delivering IS courses for executive education. The following section describes the development and delivery of a model IS course designed to meet the needs of participants in an Executive MBA program.

A MODEL INFORMATION SYSTEMS COURSE

Researchers and theorists agree that the key to business success in the 1990s is learning how to guide the speed, direction, and intensity of strategic and organizational change (Senge, 1990; Verlander, 1992;). Executives must develop unique learning capabilities to help their businesses sustain competitive momentum. As the result of an extensive examination of the theories of individual, organizational, and adult learning, Verlander suggests several fundamental changes in executive education which he believes can help executives learn to understand new teachings about individuals and organizations while simultaneously learning required Executive MBA program content. The IS component of the Executive MBA program is undeniably imbedded in this greater educational experience, and has the potential to become an integrating force within the curriculum.

Verlander's (1992) suggestions for improving executive education apply directly to the creation of a model IS course. His recommendations form the basis for the course development guidelines and assumptions that include:

- Executives should be better prepared before participating in the course. Better preparation can even out disparities in learners' knowledge levels thereby facilitating the learning process.

- Content should focus more on the needs and actual business problems of the participants. Adult learners are motivated to learn when learning helps to satisfy personal needs and interests. These needs are the starting point for learning experiences. Furthermore, appropriate units of learning are organized around business issues and situations. They are not the sole domains of academic subjects.

- Instructional processes and delivery methods should be more participative and more learner-centered. Experiential learning must encourage the examination of the historical experiences brought to the course as well as experiences gained through the course itself. Executive learners are receptive to innovative learning strategies and executive courses provide ample opportunities to incorporate a variety of delivery approaches.

- The course should help executives discover, identify, and interpret the problems that need solving. A process of inquiry that stimulates critical examination through dialogue and personal mastery through application can enhance this self-directedness on the part of the learner.

- The impact of the course must be greater and more measurable than traditional courses at both the individual and organizational levels. Evaluation of learning must be connected in some way to measurable results.

The development of a new IS course that incorporates the theoretical tenets summarized above is discussed in the next section.

Course Development and Delivery

The development and delivery of the model course involved three primary steps: initial assessment, determination of needs and interests, identification of appropriate learning strategies and establishment of evaluation criteria. The outline of the resulting course is shown in Table 2.

Initial Assessment. The development of the model course began with a series of preliminary contacts with course participants. An assessment of the existing IS knowledge level of course participants was conducted by examining biographical information on each participant, requesting a brief written description from each participant regarding familiarity with IS tools and concepts, and informally discussing participant background. The assessment data were used to recommend preparatory reading or assignments to help ensure all participants began the course with appropriate background.

In addition, the first class session was designed to allow coverage of the more complicated or advanced background concepts deemed necessary for use in the remainder of the course. It was not possible to determine the content components of the first class until the remainder of the course was developed. This formed an essential feedback loop for ensuring participants were adequately prepared for the learning strategies to follow.

Determination of Needs and Interests. The second step in the development of the model course was a written survey of participants' needs and interests pertaining to the IS course. The objective of the survey was to generate a list of potential topics for inclusion in the course. The survey instrument listed the key IS management issues previously identified by senior IS executives (Janz, Brancheau, and Wetherbe, 1995; Niederman, Brancheau, and Wetherbe, 1991) and asked each participant to select and rank three personal preferences. Participants were also allowed to "write in" other topic choices as desired. This provided each executive with the opportunity to

TABLE 2
MODEL IS COURSE OUTLINE

Period	Theme
Week 0	**Assessment of existing knowledge levels, needs, and interests**
Week 1	**Introduction and Overview** What exactly does each participant bring to the table?
Week 2	**Management in the Information Age(Issues 2,3,9)** What do you know about the information systems function in your organization?
Week 3	**Strategic Importance of Information Technology(Issues 1,2,5,7,9)** Does the innovative use of information technology create advantages for your business unit?
Week 4	**Analyzing Existing Information Systems(Issues 2,4,8,9)** Do the existing information systems meet the needs of your business unit?
Week 5	**Developing an Information Technology Strategy(Issues 1,2,5,9,10)** Does your business unit have an existing information technology strategy statement? Is it tied to the unit's business strategy? The overall organization business strategy?
Week 6	**Information Technology Planning(Issues 1,5,9)** Can you turn the information technology strategy statement for your business unit into an information technology plan?
Week 7	**Information System Development and Executive Involvement (Issues 2,3,4,8)** What is your role in the acquisition and development of information systems for your business unit?
Week 8	**Change Management and Information Technology Implementation I (Issues 2,4,6,8)** What are the critical success factors for an information technology implementation in your business unit?
Week 9	**Change Management and Information Technology Implementation II (Issues 1,6,9,10)** How can you best implement a new information technology in your business unit?
Week 10	**Measuring the Business Value of Information Technology** What is the payoff of your business unit's investment in information technology?
Week 11	**Information Technology and Organizational Learning (Issues 2,3)** Can information technology make a meaningful contribution to reengineering your business unit?
Week 12	**Issues and Trends in Information Technology and Organizations (Issues 1,2,3,6)** How far are you from the "leading edge"?
Week 13	**Conclusion, Debriefing, and Evaluation (Issues 4,6,7,10)** How meaningful was your learning experience?

select topics to satisfy individual needs and interests, while maintaining a focus on topics that were deemed relevant and meaningful by empirical research. The aggregate rankings led to the selection of a set of topics for coverage during the thirteen-week course. Nine of the topics selected for inclusion in the course matched nine of the top 20 IS management issues. The nine issues are noted in Table 2.

Identification of Appropriate Learning Strategies and Selection of Evaluation Criteria. The third step in IS course development was the meaningful arrangement of the selected topics and the selection of processes and learning strategies designed to guide the executive through a sequence of learning experiences. This was the most difficult task in the process, because it required creative blending of the topic areas and the simultaneous

development of learning measurement and student evaluation criteria.

The course outline shown in Table 2 displays the primary theme for each class period. Book excerpts and readings for each class period provided the required traditional content related to each of the topics. Below each theme is a general question that helped the executive focus and organize the learning process around an actual business situation or issue.

Although the questions may appear to be very general, they form an important component of the course design. One of the learning strategies selected for evaluation was the production of a weekly written report. Participants were instructed to read and review the written materials and consider them carefully and thoughtfully. More specifically, the connections the learner could make between past experiences, new information provided in the reading material, and discussions held in class were to be explicated and integrated in each weekly report. The question associated with each topic was designed to focus the learners' mental processes during report creation. The quality of the connections and integration of ideas in the weekly report were reflective of the level and quality of learning. The weekly reports formed the basis for 30 percent of learner evaluation.

The second learning strategy selected for evaluation was active participation in class discussions. A panel discussion format similar to a modified talk show was adopted during class sessions. A panel of volunteer discussants was formed at the beginning of each class session and the remaining participants constituted an audience. The session began with a brief statement by each discussant of observations, findings, questions, or opinions related to the session topic. Discussants had the opportunity to exchange ideas with other panel members while the audience careful observed and listened to the exchange. Following the exchange of ideas by panel members, the discussion was opened to audience input. The instructor acted as host for the discussion, facilitating the exchange of ideas and encouraging active participation with well-placed questions and guided conversation flow. Through the dialogue, executives were able to raise, interpret, or resolve numerous IS management issues and conflicts related to prior experiences, reading materials, current business practices, and future business challenges. Active class participation and panel discussion roles, gauged by the quality of conversational input, accounted for approximately 20 percent of learner evaluation.

The final learning strategy incorporated in the course involved a live field project that was conducted by each executive within a business unit of the executive's choice. The focus of the project was on learning to apply and adapt a methodology for IT-enabled business process redesign in an attempt to resolve a real business issue. The selection of a learning strategy that relied on an actual business situation enhanced the educational process in several ways. First, it helped organize traditional course topics into a more appropriate experiential learning unit. It also helped participants learn to apply and master the concepts and techniques garnered from the traditional content. In addition, it enhanced the likelihood that greater and more measurable impacts would result from the course, since project results were readily implemented.

Another important aspect of the project learning strategy was self-evaluation. Participants were required to devote a section of the final written project report to the assessment of their learning experience. Executives were asked to document and evaluate their experiences while conducting the business process redesign activities. Specifically, they were asked to comment on what part of the project methodology was most difficult, what part was most easy, what part had the most significant value, and what part was least valuable. The evaluation also provided a valuable feedback loop for future course development efforts. The project provided a key experiential learning opportunity, and formed the basis for approximately 50 percent of learner evaluation.

Course Evaluation

The model IS course described above was developed during the summer of 1993 for the Executive MBA program at an urban university in the Midwest. The course was implemented in the fall 1993 academic semester as a curriculum component for the Executive MBA Class of 1994. There were 24 students enrolled in the course. Three evaluations were conducted with respect to the model course. First, a qualitative mid-term evaluation was accomplished through the use of an informal, written format. Feedback from this evaluation allowed the instructor to adjust the course mid-semester and further enhance the participants' learning experience. Second, a separate evaluation of the project process was conducted at semester end to capture participants' perception of the impact and contribution of the learning experience. Finally, an overall participant evaluation of the course content and the course in general was conducted at semester end.

The two most valuable aspects of the class identified by participants were the open and lively class discussions, and the multiple perspectives on IS provided by the combination of course content and discussion. During the discussions the executives were able to express ideas and share varying perspectives on the same IS and organizational phenomena. They learned from exploring the "how" and "why" of business similarities and variances through their dialogue. For most of the executives, the view of the complexities of IS management was broadened and many claimed they were becoming aware of and beginning to understand the interconnections between IS and the organization for the first time. The weekly reports were also identified as being a very valuable portion of the course. The executives felt that although the report required a great deal of effort, it helped them think more critically and focus on the integration of ideas.

The evaluation of the project process was used to determine the extent of impact each executive perceived as a result of participation in the course. In general, the more likely an executive was to reuse the IT-enabled business process design methodology applied in the project, the greater the perceived benefits from the course. Overall, the model course received higher evaluations in both content and process than the previous IS course offerings in the Executive MBA program at the university.

CONCLUSIONS

The development and delivery of relevant, meaningful IS courses in the Executive MBA program has the potential to influence executive involvement in the IS management and planning process. Research shows that this involvement can enhance the benefits realized by the organization and improve organizational performance. Therefore the suggested title for the model course described in this study is "Managing Information Technology for Performance."

The burgeoning growth and importance of IT/IS is reflected in the increased attention that IT investments are receiving from executive managers. Clearly, sources of knowledge other than IS in-house staff are being sought by executives. The demand for executive education related to IT/IS indicates a continuing need for Executive MBA program IS course offerings.

The IS course also provides a potential venue for integrating, through information infrastructures, a variety of management concepts and techniques such as organization design, continuous improvement, total quality management, and business reengineering. By following a course development methodology that generates relevant, timely topics and state-of-the-art delivery methods, the IS course can help counter industry and media criticisms that executive management education is out of sync with modern business needs. In fact, the inclusion of the *right* IS course can prove that business schools are truly in touch with industry's needs for the next millenium!

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